WASHINGTON
HIGHER
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COORDINATING BOARD

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Bachelor of Science in Agricultural and Food Systems

Introduction

Washington State University is seeking Higher Education Coordinating Board (HECB) approval to offer a Bachelor of Science in Agricultural and Food Systems. This program is being proposed in response meeting the needs in an increasingly complex industry, and to a reorganization within the College of Agricultural, Human, and Natural Resource Sciences (CAHNRS), which resulted in the elimination of three degree programs: entomology, biosystems engineering, and integrated cropping systems. Upon approval of the Bachelor of Science in Agricultural and Food Systems, four additional programs – agricultural communication, agricultural technology management, agricultural education, and general agriculture – would be eliminated. Five of the seven eliminated programs would be subsumed in whole or in part under majors within the proposed degree program. In addition, the program would add a major in organic agriculture, which would be the first of its kind nationally. The proposed BS program would begin in summer 2006 and is expected to enroll 104 students in the first year.

Relationship to Institutional Role and Mission and the Strategic Master Plan

As a land grant institution, Washington State University has a special mission to provide research and instruction in the agricultural sciences. Specifically, the CAHNRS mission includes the provision of "leadership in discovering, accessing, and disseminating knowledge through high quality research, instruction, and extension programs that contribute to a safe, abundant food and fiber supply; promotes the well-being of individuals, families, and communities; enhancing sustainability of agricultural and economic systems; and promoting stewardship of natural resources and ecological systems." The proposed degree program would fit into this mission by providing a combination of the basic scientific and technical skills required in the field and a broad view of agricultural systems that employers have indicated they want in new graduates.

Program goals are consistent with those of the *2004 Statewide Strategic Master Plan*, in that they provide opportunities for students to earn degrees and respond to the state's economic needs. The proposed degree program is responsive to a changing workplace, providing a broader skill-set to students in the program while maintaining a strong technical focus. The Washington

Community Trade and Economic Development (CTED) office identifies the agriculture industry as a target industry in the state's economic development plans. CTED indicates that Washington's agriculture industry is changing, and now has an emphasis on producing value-added products. This change in emphasis is important in meeting the state's economic development goals and has an impact on the level of training employers seek in new hires.

Program Need

The proposal is a response to needs expressed by students, employers, and community stakeholders. The *State and Regional Needs Assessment* finds that all occupations are becoming increasingly complex. In addition, the needs assessment recognizes the economic development goals expressed by CTED and the changing nature of key industries – including agriculture -- which require increased levels of education; both for traditional occupations and for new opportunities created through an emphasis on value-added products, rather than commodities.

Student demand for the program was assessed based on enrollments in the existing degree programs, which have been steady at 80 to 85 students. Additional demand is expected to come from a new major in organic agriculture systems and the change in focus of the other majors to a systems-based approach.

Based on the success that current graduates are experiencing in finding employment, the employment outlook for graduates is expected to be strong,. Occupations that students enter most frequently are difficult to determine from the employment projections, but based on student survey data placements appear to be strong and employers are recruiting heavily at college employment fairs. While some of the occupations that graduates enter are not specifically defined for the agricultural industry, those occupations for which data are available have historically hired baccalaureate graduates for some positions. Other positions require at least some college. For example, within farm, fish, and forestry occupations, of the 1,319 projected annual openings by 2012, nearly half (582) would require some college and, based on the current workforce, 24 would be expected to require at least a bachelor's degree. Employment projections also show a need for purchasing agents (29 projected annual openings requiring at least some college) and pest control (14 annual openings requiring some college).

Employers have expressed a need for greater numbers of workers with the skills developed in baccalaureate-level programs. They indicate that students with a broad-based education and industry specific knowledge have a greater understanding of the needs of customers. In response to a survey conducted by the college, employers, alumni and teachers indicated that graduates should develop skills in communication, technical expertise, and critical thinking. In addition, workers need to be goal-oriented and have the ability to continue learning in order to be successful in the industry in the long term. Specifically, employers want to hire workers who can think critically, analyze situations, and implement solutions – traits that employers tend to associate with workers who hold bachelor's degrees and traits that would also be developed in the program. According to the Office of the Superintendent of Public Instruction (OSPI), graduates of the agricultural education major are also in demand. OSPI reports a shortage of

teachers in that field in all but one educational service district. In addition, graduates in agricultural education are among the most likely to teach within their field.

Washington State University exclusively offers degrees in agriculture (RCW 28B.30.060, 28B.30.065); no similar programs are offered elsewhere in the state of Washington. The proposal submitted by WSU includes an analysis of three similar programs in other states.

Program Description

The Bachelor of Science in Agricultural and Food Systems is designed to prepare students for agricultural and agriculturally-related careers and to develop graduates' knowledge to ensure they are prepared to make informed decisions within the agriculture, food, fiber, and natural resources systems.

The agricultural and food systems degree is designed to provide students with the ability to: 1) understand integrated agricultural systems concepts; 2) integrate and analyze systems approaches; 3) communicate orally and in writing; and 4) develop expertise in agricultural and agricultural systems policies and practices. The degree would enable the student to choose an area of concentration in agricultural education (which includes secondary certification), pest management systems, agricultural business and technology systems, plant and soil systems, or organic agriculture systems.

The proposed program is part of a reorganization within CAHNRS that included the elimination of several degree programs. Those degrees would, in some cases, be incorporated (in whole or in part) as majors within the new degree program. The proposed degree program would provide a venue for collaboration across a number of departments within the college to offer an interdisciplinary undergraduate degree and would ensure a consistent set of coursework for all program undergraduates.

Agricultural education would transition with very little change, apart from adjustments in the core coursework required. It would become a separate major within the degree program, and would maintain the ability to graduate certified teachers. The integrated pest management (IPM) portion of the former (already eliminated) entomology degree would be reflected in the new pest management systems major, but would focus on systems. The to-be-eliminated general agriculture, agricultural communications, and agricultural technology management programs would be reflected in the agricultural business and technology systems major. The crop science, horticulture, and soil science degrees would continue; however, the agricultural production portions of those degrees would connect with the major in plant and soil systems and would include a broader systems emphasis, thus incorporating other disciplines to a greater extent. The organic agriculture systems major would be new, although WSU currently offers organic agriculture classes.

Students admitted to the program would most often enter WSU as freshmen and complete a well-defined four-year course of study. The curriculum would include a standard general education

experience, with additional preparation and coursework in science including chemistry, biology, and agricultural and food systems. In the third and fourth year of the program, students would take more specialized coursework in their chosen major and concentration. The proposal does not provide a clearly defined set of requirements needed to enter the third year of the program, which suggests that it could be difficult for transfer students to efficiently access the program.

In the first year, the program would accommodate 104 students (55 FTE). The program would grow to approximately 140 students (70 FTE) by the fifth year. There are currently80 to 85 students enrolled in the existing program majors, all of which would be brought under the proposed degree program.

The program would draw on the team of experienced faculty already in place. Eleven faculty in the College of Agricultural, Human, and Natural Resource Sciences would contribute to the program, three of whom would teach full time.

The program proposal includes a clearly defined set of expected student outcomes that are consistent with the attributes that employers seek in new hires. These outcomes would be assessed through course assignments across the program curriculum. In addition, students would be encouraged to take advantage of internship opportunities. Employers that provide internships could also evaluate students based on the program's expected learning outcomes.

The program would be assessed using a series of measures, including student evaluations and alumni and employer surveys. The program would also be assessed by the students through regular course evaluations and an end-of-program assessment. Employers would provide feedback on the program through evaluation of graduates and interns, as well as an annual survey conducted by the college. The program also would track student-retention rates and employment outcomes and would make adjustments as necessary. The program would undergo a comprehensive review after four years, and would subsequently be reviewed on a five-year cycle.

Diversity

The proposal identifies several specific strategies to attract a diverse student body. In general, agriculture programs are finding it more difficult to rely on rural communities to recruit students. The AFS program would increase efforts to recruit students in these areas, with a focus on the recruitment of Hispanic students and other minorities. The program would rely on a network of recent graduates to help promote the program and encourage students to apply. In addition, the program would rely on a recruiter who would conduct outreach activities in rural communities. A second area of emphasis that is new for agricultural programs is a greater focus on students from cities and suburban areas. Agricultural programs around the country find that they can successfully attract students from non-farm backgrounds into the major and workforce. The change in focus of the majors to an approach that examines the entire system – from production

through consumption – attracts a broader range of students and provides a more well-rounded educational experience that benefits students and employers.

External Review

The program was reviewed by two external experts: Leon Schumacher, professor and chair, Agricultural Systems Management, University of Missouri, and Philip Buriak, professor, Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign.

Both reviewers expressed support for the program and noted that the proposal would provide an appropriate change in focus that recognizes the evolving needs in the workplace. Both noted, however, that the lack of specificity in the name of the degree program could potentially be confusing to employers; nonetheless, Buriak noted that a similar lack of specificity in his program actually worked to the students' advantage by providing them with an opportunity to market themselves more broadly, both within and outside of the agricultural industry. Buriak further noted that a similar change in focus to include a broader systems approach at his own institution has provided students with a broadened set of career choices, and that graduates of his program have been very successful in their pursuit of careers in management, marketing, and application of technologies.

Schumacher noted that the proposal's systems approach is a good way to provide information to students, because it improves students' understanding of the material. Schumacher raised an additional concern that the structure of the program could make it difficult for faculty to maintain disciplinary ties and research activities. The program developers responded to the second concern with a clarification that program faculty would maintain a disciplinary home in the college that would enable them to conduct research and teach in discipline-specific graduate programs.

Program Costs

The program would enroll 55 FTE students in the first year, growing to 70 FTE students by the fifth year of the program. The program would draw on existing faculty expertise. Program costs are estimated, based on faculty time equivalent to 4.975 full-time faculty positions. Administrative costs are based on a .5 FTE program chair and a .175 FTE administrative support position.

No capital or library improvements would be required for program implementation.

In the first year of the program, with an entering class of 55 FTE, costs are estimated to be $10,985 per FTE. At full enrollment in year five (70 FTE), the cost would be $8,631 per FTE. The average cost of instruction for undergraduate students in agriculture at Washington State University is $10,746.

Staff Analysis

The proposed program would support the unique role and mission of the institution and the department. The proposed degree program is closely tied to the founding mission of the institution, and the curricular changes are responsive to changes in the industry and the needs of employers and students.

The program also responds to the master plan's goals of providing opportunities for students to earn degrees and responding to the economic needs of the state by providing students with a broad education that would prepare them to be more flexible and adaptable in their careers. Students would develop a greater understanding of the industry than in existing degree programs.

The proposed program includes an assessment approach with well-defined student learning outcomes tied to specific coursework in the curriculum and assessed throughout the program. In addition, the program would implement an assessment system that would provide feedback from a variety of stakeholders to ensure continuous program improvement.

The program responds to demonstrated student, employer, and community needs, and is consistent with the state and regional needs assessment and the institution's own assessment of need.

In addition, the program would implement a recruiting plan that is designed to draw a diverse student body. The recruiting plan also recognizes changes in the demographics of students in rural communities that traditionally have taken advantage of agriculture programs, and as a result, would seek to draw increasing numbers of students from urban and suburban areas. A weakness in the proposal in this area is the lack of a clear articulation with community college programs. HECB staff would recommend the development of clearly defined requirements for entry at the junior level that would allow for easy articulation with community college programs.

The program would not duplicate existing programs and would be offered at a reasonable cost.

Recommendation

Based on careful review of the program proposal and supplemental sources, HECB staff recommend approval of the Bachelor of Science in Agricultural and Food Systems,

The Education Committee met on May 15, 2006 and voted unanimously to recommend approval of the Bachelor of Science in Agricultural and Food Systems at Washington State University.

RESOLUTION NO. 06-09

WHEREAS, Washington State University proposes to offer a Bachelor of Science in Agricultural and Food Systems; and

WHEREAS, The program would support the unique role and mission of the institution; and

WHEREAS, The program would respond to demonstrated student, employer, and community needs that are consistent with the state and regional needs assessment and the institution's own assessment of need; and

WHEREAS, The recruitment and diversity plan are appropriate to the program and recognize changing demographics in the rural communities that have been traditionally served by the college; and

WHEREAS, The program has received support from external experts; and

WHEREAS, The costs are reasonable;

THEREFORE, BE IT RESOLVED, That the Higher Education Coordinating Board approves the Bachelor of Science in Agricultural and Food Systems at Washington State University.

Adopted:

May 25, 2006

Attest:

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Gene J. Colin, Chair

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Jesus Hernandez, Secretary